

LONG-TERM ENVIRONMENTAL CONSEQUENCES OF “PEACEFUL” NUCLEAR EXPLOSIONS

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The review is devoted to the environmental consequences of the so called “peaceful” (industrial) nuclear explosions (PNE) that were conducted by the former USSR in the last century. The paper is based on the original experimental data that have been obtained by the author’s institutes in the period 1996–2010, as well as on the materials published by other investigators and officials. Special attention is given to the four PNE sites located in the Russian Federation: “Globus-1” (Ivanovo Region), “Taiga” (Perm Territory), “Kraton-3” and “Crystal” (the Republic of Sakha (Yakutia)). The sites were significantly contaminated with long-lived radionuclides due to accidental or planned releases of the products of underground explosions on the Earth’s surface.

The following topics are considered: a) alteration and reparation of ecosystems; b) the current levels of radioactive contamination for the ground surface, water bodies and biota; c) the gamma-ray fields in air; d) actual and potential exposure of a human; e) implementation and efficiency of countermeasures; f) reaction of mass-media and general public on the PNEs and their consequences, including application of countermeasures; g) selection of radiological criteria for radiation safety at the PNE sites for workers and population; h) elaboration of generic regulatory documents and practical recommendations for management of the PNE sites; h) using the PNE sites for long-term radio-ecological research.